

## CLAIMS

1. A pharmaceutical agent having serotonin 5-HT<sub>7</sub> receptor antagonist activity and muscarinic M<sub>4</sub> receptor agonist activity, for use in treating psychotic conditions, the agent does not include compounds having a chemical structure falling within the following definition, namely:

bisarylazepines substituted at the azepine ring portion by a 4-methyl piperazinyl, wherein the aryl moieties are fused to the azepine ring and wherein aryl is phenyl, substituted phenyl, thienyl or substituted thienyl; including optional replacement of an azepine ring carbon atom with a nitrogen atom, or substitution of said ring carbon atom.

2. The pharmaceutical agent according to claim 1 wherein the psychotic condition is schizophrenia and/or bipolar disorder.

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3. The pharmaceutical agent according to claim 1 or claim 2 which comprises a mixture of at least two compounds, wherein at least one of said compounds possess serotonin 5-HT<sub>7</sub> receptor antagonist activity and wherein at least one of said compounds possess muscarinic M<sub>4</sub> receptor agonist activity.

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4. The pharmaceutical agent according to claim 1 or claim 2 which comprises a compound which possess both serotonin 5-HT<sub>7</sub> receptor antagonist activity and muscarinic M<sub>4</sub> receptor agonist activity.

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5. The pharmaceutical agent according to any one of claims 1 to 4 which additionally has a low or substantially no dopaminergic D<sub>2</sub> receptor affinity.
- 5 6. The pharmaceutical agent according to claim 5 wherein said dopaminergic D<sub>2</sub> receptor affinity is a minimum of at least 5 fold less than the affinity at the muscarinic M<sub>4</sub> and/or serotonin 5-HT<sub>7</sub> receptors.
- 10 7. The pharmaceutical agent according to claim 6 wherein said dopaminergic D<sub>2</sub> receptor affinity is at least 50 fold less than the affinity at the muscarinic M<sub>4</sub> and/or serotonin 5-HT<sub>7</sub> receptors.
- 15 8. A pharmaceutical agent according to any one of claims 1 to 7 for use in therapy.
- 20 9. A pharmaceutical formulation comprising a pharmaceutical agent according to any one of claims 1 to 7 together with a pharmaceutically acceptable carrier therefor.
- 25 10. Use of a pharmaceutical agent according to any one of claims 1 to 7 for the preparation of a medicament for the treatment or prophylaxis of schizophrenia and/or bipolar disorder.
- 30 11. A method of treating psychotic conditions in a patient in need thereof, comprising administering to the patient an effective amount of a pharmaceutical agent according to any one of claims 1 to 7.

12. A method of identifying an agent having the properties according to the present invention comprising the steps of:

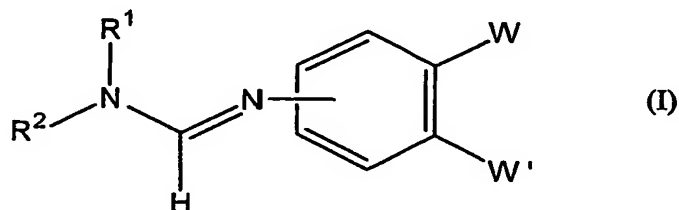
a) providing an agent to be tested;

5 b) subjecting said agent to one or more test procedures to identify 5-HT<sub>7</sub> receptor antagonist activity and muscarinic M<sub>4</sub> receptor agonist activity of said agent;

10 wherein the desired agent is considered to have been identified when said agent provides a 5-HT<sub>7</sub> receptor antagonist activity and a muscarinic M<sub>4</sub> receptor agonist activity.

13. The method according to claim 12 further comprising  
15 the step of subjecting the agent to a test procedure to identify low dopaminergic D<sub>2</sub> receptor affinity.

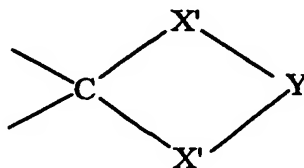
14. A compound represented by formula (I):



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where R<sup>1</sup> and R<sup>2</sup> independently are a hydrogen atom, a substituted or unsubstituted straight chain or branched chain C<sub>1-6</sub> alkyl group or C<sub>1-6</sub> alkoxy group, a substituted  
25 or unsubstituted C<sub>3-8</sub> cycloalkyl group or a C<sub>3-8</sub> cycloalkoxy group, or an aralkyl group, or R<sup>1</sup> and R<sup>2</sup> form, together with the nitrogen atom to which they are bonded, a cyclic amine; W and W' form, together with the benzene ring to which they are bonded, a fused five-membered,  
30 six-membered or seven-membered saturated carbocyclic ring being independently unsubstituted, substituted or fully

substituted at each carbon atom of the ring by a group -  
 $X-R^{13}$  where X is O, S, SO or  $SO_2$  and  $R^{13}$  is a hydrogen  
 atom, a  $C_{1-6}$  alkyl group, an acyl group, or an aroyl group  
 or two of said  $-X-R^{13}$  groups, together with the carbon  
 atom in the ring to which they are both bonded, form a  
 5 C=S group or the following group:



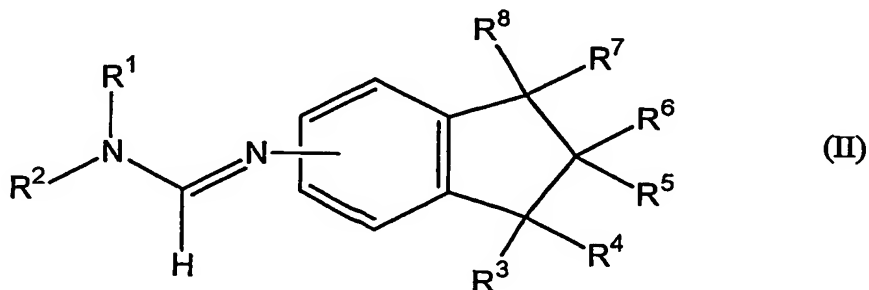
10 where both of  $X'$  are O or S and Y is a  $C_{1-3}$  alkylene  
 group.

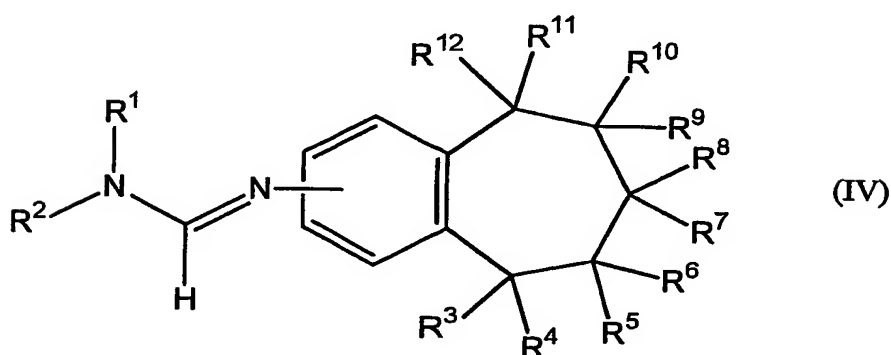
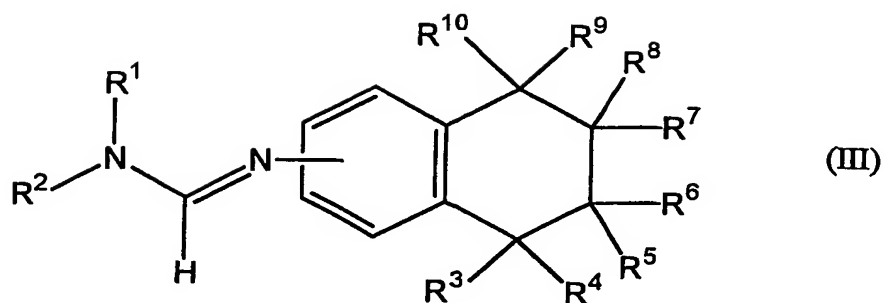
15 15. A compound according to claim 14, wherein said  
 cyclic amine is substituted by a halogen atom, a  $C_{1-6}$   
 alkyl group or a  $C_{1-6}$  alkoxy group.

16. A compound according to claim 14 or claim 15 wherein  
 said cyclic amine is fused with a benzene ring.

20 17. A compound according to claim 16 wherein said  
 benzene ring is substituted by one or two halogen atoms,  
 $C_{1-6}$  alkyl groups or  $C_{1-6}$  alkoxy groups.

25 18. A compound according to claim 14 represented by the  
 following formulae (II), (III) and (IV):

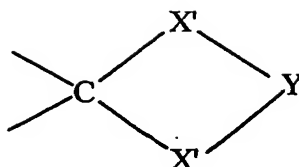




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wherein  $R^1$  and  $R^2$  independently are a hydrogen atom, a substituted or unsubstituted straight chain or branched chain  $C_{1-6}$  alkyl group or  $C_{1-6}$  alkoxy group, a substituted or unsubstituted  $C_{1-6}$  cycloalkyl group or a  $C_{1-6}$  cycloalkoxy group, or an aralkyl group, or  $R^1$  and  $R^2$  form, together with the nitrogen atom to which they are bonded, a cyclic amine;  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^6$ ,  $R^7$ ,  $R^8$ ,  $R^9$ ,  $R^{10}$ ,  $R^{11}$ , and  $R^{12}$  are independently a hydrogen atom or the group  $-X-R^{13}$  wherein  $X$  is O, S, SO or  $SO_2$  and  $R^{13}$  is a hydrogen atom, a  $C_{1-6}$  alkyl group, an acyl group, or an aroyl group.

19. A compound according to claim 16 wherein  $R^3$  and  $R^4$ ,  $R^5$  and  $R^6$ ,  $R^7$  and  $R^8$ ,  $R^9$  and  $R^{10}$ , and/or  $R^{11}$  and  $R^{12}$  together with the carbon atom in the ring to which they are both bonded, form a C=S group or the following group:

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wherein both of X' are O or S and Y is a C<sub>1-3</sub> alkylene group.

- 5      20. A compound according to claim 18 or claim 19 wherein R<sup>1</sup> and R<sup>2</sup> form together with the nitrogen atom to which they are bonded, a four-membered, five-membered or six-membered cyclic amine.
- 10     21. A compound according to claim 20 wherein said six-membered cyclic amine is fused with a benzene ring.
22. A compound according to claim 18 wherein R<sup>1</sup> and R<sup>2</sup> are a C<sub>1-6</sub> alkyl group.
- 15     23. A compound according to any one of claims 14 to 22 which possesses serotonin 5-HT<sub>7</sub> receptor antagonist activity and/or muscarinic M<sub>4</sub> receptor agonist activity.
- 20     24. A compound according to claim 23 which additionally has a low or substantially no dopaminergic D<sub>2</sub> receptor affinity.
- 25     25. A compound according to any one of claims 14 to 24 for use in therapy.
26. A pharmaceutical formulation comprising a compound according to any one of claims 14 to 24 admixed with a pharmaceutically acceptable carrier.

27. Use of a compound according to any one of claims 14 to 24 for the preparation of a medicament for the treatment or prophylaxis of schizophrenia and/or bipolar disorder.

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28. A method of treating psychotic conditions in a patient in need thereof, comprising administering to the patient an effective amount of a compound according to any one of claims 14 to 24.